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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,868	04/12/2004	Jussi Pihlajamaa	060282.00150	1847
32294 7590 10/31/2007 SQUIRE, SANDERS & DEMPSEY L.L.P. 14TH FLOOR 8000 TOWERS CRESCENT TYSONS CORNER, VA 22182			EXAMINER THIER, MICHAEL	
			ART UNIT 2617	PAPER NUMBER
			MAIL DATE 10/31/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/821,868	Applicant(s) PIHLAJAMAA ET AL.	
	Examiner Michael T. Thier	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

Response to Arguments

1. Applicant's arguments, see Pre Brief Conference Request, filed 7/2/2007, with respect to the rejection(s) of claim(s) 1-16 under 35 U.S.C. 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Gunzelmann et al. (US 2004/0097250).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bridgelall (US 6717516) in view of Gunzelmann et al. (US 2004/0097250).

Regarding claims 1, 6 and, 13. Bridgelall teaches a radio equipment system having a modular structure (figure 2), the system comprising:

a baseband modem; (figure 2 item 46)

a digital interface; (figure 2 item 42) and

a radio frequency unit including radio frequency control means and radio frequency parts means, (figure 2 item 34, the RF unit is inherently digitally operated and column 2 lines 31-39, column 5 lines 1-15)

wherein the baseband modem and the radio frequency unit respectively form physically separate modules which are connected with each other by the digital interface. (see figure 2 which shows the RF unit 34, outside the box 58, which contains the baseband modem 46)

However, Bridgelall does not specifically disclose that the RF module and the baseband modem are physically separate modules connected by a digital interface.

Gunzelmann teaches a transmission configuration in figure 1. He clearly shows the baseband module, item 1, being physically separate from the RF unit, item 3, and connected by a digital interface, item 2. Further see par. 6, which clearly states that the baseband parts and the RF parts are separate from one another. The examiner would further like to point to par. 9-12 which explains the baseband component, radio frequency unit including digitally operating frequency control means and radio frequency parts (i.e. par 11, digital data transmission, and the digital interface, which therefore teaches all the limitations of the claims, except for the fact that the baseband module includes a baseband modem, which is clearly taught by the primary reference, Bridgelall, in figure 2 item 46.

Regarding claim 2. Bridgelall further teaches wherein the module forming the baseband modem comprises: correction means for performing forward error correction coding and decoding; and symbol mapping means for symbol mapping and

demapping. (column 5 lines 1-15, 29-45 and column 7 lines 33-38 read on the limitations in this claim)

Regarding claims 3 and 5. Bridgelall further teaches wherein the radio frequency control means comprises respective control loops for pulse shape filtering, transmitter and receiver correction loops, timing recovery means for performing receiver timing recovery, and carrier recovery means for performing carrier timing recovery. (column 5 lines 29-45 reads on the limitations in this claim)

Regarding claim 4. Bridgelall further teaches wherein the transmitter and receiver correction loops comprise quadratic error correction means for performing quadratic error correction, balance error correction means for performing balance error correction, bias error correction means for performing bias error correction, and a gain error correction means for performing bias error correction. (column 5 lines 29-45 reads on the limitations in this claim, the different types of correction means are well known in the art and would have been obvious to one of ordinary skill to allow for the correct signal to be transmitted without error.)

Regarding claim 7. Bridgelall further teaches sending, from the baseband modem module to the radio frequency unit module, transmitter data including in-phase component signals and quadratic phase component signals; sending, from the baseband modem module to the radio frequency unit module, transmitter clock signals; sending, from the baseband modem module to the radio frequency unit module, control signals providing support for type-specific functionalities; sending, from the radio frequency unit module to the baseband modem module, receiver clock signals;

sending, from the radio frequency unit module to the baseband modem module, receiver data including in-phase component signals and quadratic phase component signals; and exchanging, between the radio frequency unit module and the baseband modem module, microprocessor signals; wherein said sending steps and said exchanging step are driven by the digital interface. (column 5 lines 29-45 and column 6 line 37 to column 7 line 3 reads on the limitations in this claim)

Regarding claim 8. Bridgelall further teaches said method further comprising providing all signals as digital signals, and wherein a clock rate is provided as a system symbol clock rate, except for a case that a function in the modem utilizes two samples per symbol where a double symbol rate frequency is supported. (column 2 lines 31-38 and column 6 line 37 to column 7 line 3 reads on the limitations in this claim)

Regarding claim 9. Bridgelall further teaches the steps of: forward error correction coding and decoding; symbol mapping and demapping; and implementing the forward error correction coding and decoding and symbol mapping and demapping steps in the baseband modem. (column 5 lines 1-15, 29-45 and column 7 lines 33-38 read on the limitations in this claim)

Regarding claims 10 and 12. Bridgelall further teaches wherein the radio frequency control means within the module forming the radio frequency unit includes respective control loops performing pulse shape filtering, transmitter and receiver correction, receiver timing recovery and carrier recovery. (column 5 lines 29-45 reads on the limitations in this claim)

Regarding claim 11. Bridgelall further teaches wherein the transmitter and receiver correction comprises a quadratic error correction, a balance error correction, a bias error correction, and a gain error correction. (column 5 lines 29-45 reads on the limitations in this claim, the different types of correction means are well known in the art and would have been obvious to one of ordinary skill to allow for the correct signal to be transmitted without error.)

Regarding claim 14 Bridgelall further teaches wherein the signals are exchanged serially. (column 7 lines 4-37)

Regarding claim 15. Bridgelall further teaches wherein the signals are exchanged in parallel. (column 7 lines 4-37)

Regarding claim 16. Bridgelall further teaches further comprising: first sending means for sending, from the baseband modem module to the radio frequency unit module, transmitter data including in-phase component signals and quadratic phase component signals; second sending means for sending, from the baseband modem module to the radio frequency unit module, transmitter clock signals; third sending means for sending, from the baseband modem module to the radio frequency unit module, control signals providing support for type-specific functionalities; fourth sending means for sending, from the radio frequency unit module to the baseband modem module, receiver clock signals; fifth sending means for sending, from the radio frequency unit module to the baseband modem module, receiver data including in-phase component signals and quadratic phase component signals; and exchanging means for exchanging, between the radio frequency unit module and the baseband

modem module, microprocessor signals. (column 5 lines 29-46, and column 6 line 37 to column 7 line 38 reads on the limitations in this claim)

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael T. Thier whose telephone number is (571) 272-2832. The examiner can normally be reached on Monday thru Friday 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc Nguyen can be reached on (571) 272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael T Thier
Examiner
Art Unit 2617
10/24/2007



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